Digital Equity Through Data Sovereignty: a Vision for Sustaining Humanity

*Gregory Rolan[1][0000-0001-5891-3732], Sue McKemmish[1][0000-0003-4771-349X], Gillian Oliver[1][0000-0003-2943-5035], Joanne Evans[1][0000-0002-0837-765X], Shannon Faulkhead[2][0000-0003-3013-791]

[1] Monash iSchool, Faculty of Information Technology, Monash University, Melbourne, Australia
{greg.rolan, sue.mckemmish, gillian.oliver, joanne.evans}@monash.edu
[2] First Peoples Department, Museums Victoria, Melbourne, Australia
sfaulkhead@museum.vic.gov.au

Abstract. We envisage a world of global digital equity, achieved through research in, and application of, rights-based design principles and innovative technologies. In that world, stakeholders in information are no longer viewed only as users, clients, or targeted demographic markets, but as active participants in their data. We seek a future where data is neither weaponised nor exploited, but considered as sovereign to individuals, families and communities. This vision has major implications for research in informatics, data-sciences, cybersecurity, information cultures, information literacy, and a host of domain-specific disciplines such as indigenous studies, ethics, law, the arts, and so on. In this paper, we outline the rationale for this vision and some of the research topics with which we need to engage in order to progress toward this better world. In addition to the human benefit of actualising human rights, are potential economic gains. Many tens of billions of dollars are spent globally in dealing with the effects of social alienation. Though difficult to quantify, this may be reduced through data sovereignty that returns dignity and self-determination to those facing vulnerability. Through research that informs innovative information frameworks and example implementations, we can move towards facilitating marginalised and displaced communities locally and internationally to meet their lifelong, rights-based information, identity, memory, cultural heritage, evidence, and accountability needs. This, in turn can support initiatives to address historical and social justice, redress for human rights abuse, asylum, cultural safety, and security.

Keywords: Rights, Data Sovereignty, Equity, Data, Records.

1 Introduction

Imagine global digital equity — real digital equity, which transcends mere accessibility to technological devices. This would be a world where

marginalised and displaced peoples can establish and maintain rights in their data, information and records, as a crucial, but currently unmet, foundation for exercising their human rights; a world where information is used to sustain and nourish communities, families, and individuals; a world where discourses around data have shifted from commercial protection towards technologies for humanist self-actualisation. We envisage such a world, achieved through research in, and application of, rights-based design principles and innovative technologies. In that world, stakeholders in information are no longer viewed only as users, clients, or targeted demographic markets, but as active participants in their data. We seek a future where data is neither weaponised nor exploited, but considered as sovereign to individuals, families and communities.

This vision has major implications for research in informatics, datasciences, cybersecurity, information cultures, information literacy, and a host of domain-specific disciplines such as indigenous studies, ethics, law, the arts, and so on. In fact, such research cuts across many of the grand challenges of our time that can only be addressed through such work in the information sciences [1]. In this paper, we outline the rationale for this vision and some of the research topics with which we need to engage in order to progress toward this better world. Many of the examples that we use are drawn from our Australian context, but we argue that the issues we raise are relevant globally, in both developed and developing contexts.

2 Framing the Problem

Whether claiming basic rights to identity, dealing with international jurisprudence at borders, asserting rights over appropriated information, responding to the records of unwanted and invasive surveillance, or myriad other instances of contested information collection and exploitation, the issue of data sovereignty is a core, but often unrecognised, concern of displaced and marginalised peoples. Human rights are articulated in international conventions and declarations, national instruments, and local regulation. However, the actualisation of all of these rights depends on data sovereignty, including control and access rights in data, information and records. While an inability to exercise agency in our data affects us all, it disproportionately impacts marginalised and displaced peoples.

For example:

- Refugees worldwide, lack access to and control over their data, resulting in inability to exercise their rights under the United Nations (UN) Convention and Protocol Relating to the Status of Refugees 1951/1967; denial of asylum claims; return of displaced individuals into dangerous spaces; statelessness; separation of and difficulties in reuniting families; and heightened vulnerability for women and children [2].
- Around the world many governmental inquiries have highlighted the failure of information and recordkeeping systems to meet the lifelong identity, memory, cultural, accountability and information accessibility challenges for those caught up in child welfare and protection systems in the 20th and early 21st centuries [3–5]. In Australia, the most recent Royal Commission into Institutional Responses to Child Sexual Abuse [6] emphasized the pressing need for the design of information and recordkeeping systems that enable children in Care to exercise the rights set out in the UN Convention on the Rights of the Child [7]. For example, to know who they are, reconnect with family, practice culture, seek redress and bring perpetrators of abuse in Care to justice.
- Colonisation and its legacies have had and continue to have a devastating effect on Indigenous peoples [8, 9]. In order to exercise their rights under the UN Declaration on the Human Rights of Indigenous Peoples [10], and ameliorate the trauma of loss of knowledge, language and connection to Country, they need access to, and control over, records that support the recovery of Indigenous knowledge and provide evidence to support recovery of identity, family link-ups, and Native Title claims [11] Notably, such recommendations from the Australian Royal Commission into Aboriginal Deaths in Custody [12] and Bringing Them Home report [13] have never been implemented.

This data often takes the form of authoritative information or records that should manifest as instruments for identity, memory, cultural heritage and safety, security, wellbeing, and accountability [14]. However, technological advances in the 'big-data' society are (re)consolidating political and economic informational power at the centre, with divisive societal implications [15]. Too often systems designed for an uncritical and generalised 'happy centre' fail those on the margins, in all of their indi-

vidualised complexity. In response, we must shift our attention to information systems 'edge' use cases [16] of marginalised communities — as it is there that cracks in sense-making appear [17].

These issues are significant and the numbers of those at the margins are growing. For example, globally, almost 70 million people worldwide are subject to some form of forced displacement [18]. In Australia, 1 in 32 children receive Child Protection Services, with almost 50,000 children (that is, almost 1 in every 100 children) in out-of-home Care — and ten times the number of Indigenous Australian children in Care relative to their numbers in the general population [19]. There are an estimated 800,000 Indigenous[1] Australians [20] that, despite years of 'Closing the Gap' interventions, report continuing disadvantage across most health, wellbeing, social, and economic dimensions [21] due to cumulative and overwhelming stress, developmental chaos, social exclusion and social inequality [22]. Indigenous Australians continue to be impacted by the ongoing effects of dispossession, the removal of children in greater numbers than ever before (a second Stolen Generation), and denial of Indigenous sovereignty – perpetrated in the context of 'white possessiveness' where the nation-state legitimizes control and domination by discursively and materially 'disavowing' Indigenous sovereignty [23].

One common feature of these diverse groups is the social alienation that manifests through ever-deepening structures of marginalisation. Disenfranchisement from the personal information that many of us take for granted, presents a significant barrier to participation in broader society. For example, how does someone with no suitable means of identification obtain housing, employment, a bank account, and so on? How can those escaping conflict with no access to records of a previous life claim refuge and standing to begin anew? We know how institutional records and recordkeeping continue to be wielded as weapons in the pursuit of cultural genocide. How can Indigenous and First Nations people be culturally resilient in the face of ongoing surveillance, cultural appropriation, and information misuse? The marginalised and displaced do not simply disappear. Instead, they require additional and ongoing social intervention, exhibiting over-representation in the Care and Justice systems, poor health statistics, and cycles of disadvantage that can lead to intergenerational poverty.

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[1] Throughout this article, the terms 'Indigenous Australian' to refer to 'Aboriginal and Torres Strait Islander people'. In doing so, we acknowledge the diversity of Aboriginal and Torres Strait Islander peoples and communities.

This manifests in many ways to society's detriment. Although difficult to quantify, there are some indicators of societal impact in various contexts. For example, in 2015-16, total expenditure on Indigenous Australians was $33.4 billion, around twice the rate for non-Indigenous Australians [24]. It is estimated that improving equity in this case would increase the Australian GDP by more than 1%, leading to a $7.2 billion increase in income and a $4.7 billion reduction in expenditure across Australian governments [25, p73]. Moreover, while costs associated with refugee processing are opaque, we do know that the UNHCR budget for supporting displaced peoples seeking settlement is around $8 billion/year [26]. In Australia, government services to help Care-leavers locate and access poor Care system recordkeeping runs to millions of dollars per year [27], while, in the Australian state of Victoria, each cohort of 500 young people leaving Care with poor prospects each year, represents a direct cost of over $300 million [28].

In summary, the lack of individual and collective sovereignty over identity, memory, evidence, and accountability – in particular, by marginalised and displaced peoples – can cause significant social trauma, deleterious cultural impacts, and lead to both direct and indirect economic costs.

3 Research Directions

Data sovereignty is typically defined in terms of data ownership in the context of legal jurisdictions and motivated by a desire for exclusive authority and control over data assets by institutions or state actors [29], while contemporary discourses around information rights generally concern the power imbalance between consumers and commercial interests [30, 31]. For example, the European GDPR is cast in terms of the rights of data 'subjects' and not primary actors in the data itself [32]. However, rights in data are necessarily much broader in scope, as data may provide memory, identity, evidentiality, and accountability beyond any immediate transactional context [33]. Moreover, a range of communities worldwide are demanding much more complex and nuanced approaches to data sovereignties in diverse contexts, supported by suites of rights in and to data, information and records for multiple stakeholders.

While there is a growing body of research concerning the conceptualisation of data sovereignties and rights for those on the margins, with few exceptions, it has not explored the design of information systems that

address such data sovereignties and rights issues. There are very significant gaps in the human rights, information studies, Indigenous studies and information sciences literature relating to sovereignty and rights-based information requirements. Similarly, research in information cultures has largely focused on workplaces in organisational settings. As yet there have been only a few studies of the characteristics of information cultures of those at the margins [34], and none have focused on communities or identifying attributes conducive or antithetic to the exercise of data sovereignties and rights.

There is increasing recognition that embedded biases and values in software design can have particularly adverse impacts for marginalised and disempowered groups, widening the digital divide. For the marginalised and displaced, information systems and networks are becoming a root cause or exacerbating force of disenfranchisement from predictability, security, material wellbeing, and/or psychological welfare [34]. There is a pressing need for the systems with which people in vulnerable circumstances interact to better reflect the ways in which past trauma may impact on everyday lives in the present. The challenge, then, is for research leading to the design ethical, adaptive, and inclusive information systems and technologies that support the actualisation of digital equity involving human rights, social justice, and Indigenous and First Nations sovereignty.

However, even when recognised, sovereignty and rights mandates are unworkable without information systems that recognise competing claims to data sovereignties and support their arbitration. This is exacerbated by the dynamic complexity of rights and obligations, overlaid with assessments of risk across multiple dimensions – as these all change through time [36, 37]. This complexity requires the assistance of innovative technologies to optimise the management and utility of this contested information for all stakeholders. A rich body of research exists on automated reasoning about rights and obligations, mostly in the form of research on access control [38]. However, these do not do well with the inherently inconsistent, messy systems of social rights and obligations. The challenge is to develop novel approaches that enable stakeholders to capture, analyse, and negotiate such contested inconsistencies, with needs, rights, obligations and risks that may change over time.

The emergence of algorithmic decision-making as a core plank of modern information systems design [39] is a call to investigate new

modes of information governance. The use of information systems to inform decision-making is not new. However, the scale, reach, inscrutability, of these systems, together with a propensity to entrench social biases and inequities [40] suggests that an arms race between development and governance is upon us. We must find mechanisms to confront the biases, datafication, and, perhaps, blind faith in systems and information that become weapons of affect [41] for marginalised communities. Part of the governance challenge is to equip organisations to embrace the pluralities, volumes, and complexities of the digital era and understand the provenance of, and stakeholders in, the data they hold. We must develop conceptual models and practical tools to facilitate suitably documented and managed data [42] that can improve efficiencies and the effectiveness of information governance.

This vision for data equality involves (at least) the following research goals:

1. Researching and advocating the lifelong, rights-based information, identity, memory, cultural heritage, evidence and accountability needs of marginalised and displaced peoples through the development of innovative, people-centred data technologies;
2. Empowering communities through innovative, people-centred, culturally appropriate data technologies;
3. Co-designing data frameworks, infrastructures, systems and technologies embedding people-centred values and principles;
4. Developing equitable, transparent, accountable governance frameworks for data, information, recordkeeping and the deployment of technologies to support human rights, social justice and digital sovereignty; and
5. Researching cultural dimensions of complex trans-national information ecologies, including translation strategies to mitigate against language colonization.

These may involve:

- Models of complex information ecologies that support lifelong rights-based information, identity, memory, cultural heritage, evidence and accountability need;
- Co-designed and person centric applications of modern and emerging technologies such as data science for decision-making and analytics, block chain cryptography for non-repudiation, augmented and virtual

reality for complex and contextual data visualisation – with a focus on design for equity, rights and justice;
- Frameworks, infrastructures, and systems to support digital sovereignty and equity — facilitating individual and collective agency in the creation, capture, management, and use of data information and records;
- Comparative studies of human rights, digital sovereignty, archival autonomy, data, information and recordkeeping literacy, social and historical justice and reconciliation;
- Adaptive interoperability frameworks incorporating policies, protocols, and tools to support digital equity, sovereignty, and rights negotiation;
- Innovative uses of data and recordkeeping analytics that employ smart content and context analysis and information visualisation in interfaces and system interactions; and
- Governance, accountability, monitoring, and auditing mechanisms for data, information, recordkeeping and deployment of technologies in participatory approaches to creating, managing and sharing data, information and records and co-designing systems.

Such research will require critical and participatory methodologies that will explicitly and deliberately empower communities as partners in the research process from conception to dissemination and as co-owners of the outcomes [43]. We need to recognise community and academia as equal partners, acknowledging and respecting their diverse knowledge, skills and contributions. This work will identify, analyse, negotiate and integrate the differing and co-evolving values, needs, expectations, motivations, expertise and experience that the different partners bring.

By contributing new knowledge about how smart and secure information technologies can facilitate data sovereignties, the research can advance the actualisation of human rights for marginalised and displaced peoples. Developing an innovative information framework and example implementations can demonstrate a workable path through the complexity, bringing data-holders and rights-advocates together to focus on policy, practice, and regulation. The ultimate goal would be to equip marginalised and displaced communities locally and internationally to meet their lifelong, rights-based information, identity, memory, cultural heritage, evidence, and accountability needs for historical and social justice, redress for human rights abuse, asylum, cultural safety, and security.

In addition to the human benefit of actualising human rights, are the potential economic gains. The many tens of billions of dollars spent globally in dealing with the effects of social alienation, though difficult to quantify, may be reduced through data sovereignty that returns dignity and self-determination to those facing vulnerability. Interventions of this nature that foster independence and self-reliance, likewise reduce the burden on support services.

4 Conclusion

By contributing new knowledge about how smart and secure information technologies can facilitate data sovereignties, we can advance the actualisation of human rights for marginalised and displaced peoples. With innovative information frameworks and example implementations that demonstrate a workable path through the complexity, these outcomes can serve to bring data-holders and rights-advocates together to focus on the policy, practice, and regulation. This, in turn, can equip marginalised and displaced communities locally and internationally to meet their lifelong, rights-based information, identity, memory, cultural heritage, evidence, and accountability needs for historical and social justice, redress for human rights abuse, asylum, cultural safety, and security.

In addition to the human benefit of actualising human rights, are these potential economic gains. The many tens of billions of dollars spent globally in dealing with the effects of social alienation, though difficult to quantify, may be reduced through data sovereignty that returns dignity and self-determination to those facing vulnerability. Interventions of this nature that foster independence and self-reliance likewise reduce the burden on support services.

Once established we can then turn to other problem domains to address similarly complex problems in social contexts that involve multiple stakeholders with competing claims. We have outlined an ambitious vision to support the information needs and rights of those at the margins of society across multiple disparate international contexts. We envision a global collaboration, brought together to address the ‘wicked’ problem of digital equity for human rights and social justice for all. Imagine that.

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